530 HOWARD STREET, SUITE 400, SAN FRANCISCO, CA 94105
PHONE: (415) 281-8730
FAX: (415) 281-8735

TECHLAW INC.

December 14, 2001

Mr. James Chang (SFD-8-1)
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

Subject: **Contract No. 68-W-98-0220 / WA No. 220-11-09WQ**
George/Norton Air Force Base Work Assignment
Final Split Sampling Report, March 21, 2001 Soil Pesticide Investigation, George Air Force Base

Dear Mr. Chang,

Enclosed is the Final Split Sampling Report for the March 2001 Soil Pesticide Investigation at George Air Force Base. This report has been revised from an earlier document dated June 20, 2001 to include comments from TN & Associates.

This report is being forwarded to you through electronic mail (via Internet) in WordPerfect® Version 8.0 format. A hard copy of the evaluation will also be submitted with this cover letter. TechLaw understands you will review and augment the evaluation at your discretion.

Thank you for the opportunity to provide U. S. EPA with technical oversight services at George Air Force Base. Should you have any questions, please call Bill Mabey, Site Manager, at (415) 281-8730, ext. 24.

Sincerely,

Indira Balkissoon
Regional Manager

copy to: Angela Commisso, U.S. EPA Region IX w/o attachment
P. Brown-Derocher, TechLaw/Central Files
Mr. Jehiel Cass, California Regional Water Quality Control Board
Mr. Calvin Cox, TN & Associates (3 copies)
Ms. Wendy McClellan, Montgomery Watson Harza

geo098 FinDielSSR

GEORGE AIR FORCE BASE
Victorville, California

Final Split Sampling Report, March 2001 Soil Pesticide Investigation, George Air Force Base

Submitted to:

Mr. James Chang
EPA Work Assignment Manager
U.S. Environmental Protection Agency
Region IX SFD-8-1
75 Hawthorne Street
San Francisco, California 94105

Submitted by:

TechLaw Inc.
530 Howard Street
Suite 400
San Francisco, California 94105

EPA Work Assignment No.	**220-11-09WQ**
U.S. EPA Site ID No	**CA2570024453**
Contract No.	**68-W-98-0220**
EPA WAM	**James Chang**
Telephone No.	**(415) 744-2158**
TechLaw Site Manager	**Bill Mabey**
Telephone No.	**(415) 281-8730 x 24**

December 14, 2001

Final Split Sampling Report,
March 2001 Soil Pesticide Investigation,
George Air Force Base

Table of Contents

Tables

Attachments

Final Split Sampling Report
March 2001 Soil Pesticide Investigation,
George Air Force Base, California

1.0 Introduction

This report presents the results of TechLaw's split sampling activities on behalf of the U.S. EPA conducted at George Air Force Base in Victorville, California. The U.S. EPA requested that TechLaw collect soil split samples during a March 2001 soil sampling event at George Air Force Base. Sampling was conducted in accordance with TechLaw's "Split Sampling Plan" dated March 30, 2000. The split sampling activities were performed under U.S. EPA Contract No. 68-W-98-220 and U.S. EPA work assignment No. 220-11-Q7LW.

This report presents the scope of work, the split sampling procedures, and the analytical results of soil split samples collected during the March 2001 soil sampling event.

2.0 Scope of Work

Twelve surface and subsurface soil samples (with quality control samples) were collected on behalf of the U.S. EPA from six locations (SS-1 through SS-6) during the split sampling event. Table 1 summarizes the locations sampled and analyses performed. Mr. Robert Ponce of TRC Environmental, subcontractor to TechLaw, participated on behalf of the U.S. EPA in the split sampling activities on March 21, 2001.

The rationale for selecting each sampling location is summarized below, and photographs of the sampling locations are included in Attachment D (Field Log):

SS-1 (Golf Course)
Rationale: To address property transfer concerns about possible Dieldrin contamination in soil in the golf course area. The samples were collected from a grassy area on the golf course that appears to be in a low area where surface water would collect during the wet season.

SS-2 (Golf Course)
Rationale: To address concerns about possible Dieldrin contamination in soil near three maintenance buildings where pesticide handling may have occurred. Samples were collected in swale near buildings and about 8-feet off a gravel road.

SS-3 (Golf Course)
Rationale: To address concerns about possible Dieldrin contamination in soil near three maintenance buildings where pesticide handling may have occurred. Samples were collected about 8-feet further down the swale from the SS-2 location, and about 8-feet off the gravel road.

SS-4 (Golf Course)
Rationale: To address concerns about possible Dieldrin contamination in soil near one of three

maintenance buildings where pesticide handling may have occurred. Samples were collected in a dirt area in what is now an equipment storage yard.

SS-5 (Housing Area)
Rationale: To investigate the possibility that pesticides may have been injected into the ground at the foundations of the buildings to control termites in the housing area. Samples were collected adjacent to a wall attached to a dwelling at the corner of Virginia Avenue and Idaho Street.

SS-6 (Housing Area)
Rationale: To investigate the possibility that pesticides may have been injected into the ground at the foundations of the buildings to control termites in the housing area. This location is in a yard about 30 feet from a dwelling at the southern end of the Housing Area, toward the Golf Course.

3.0 Field Work

The TechLaw representative who directed the field sampling on behalf of the U.S. EPA was Mr. Robert Ponce. Mr. Ponce served as the Field Team Leader and Site Safety Officer. All samples were collected on March 21, 2001.

3.1 Split Sampling Procedures

The Air Force contractor conducted the collection of sample from the soil auger at depth of 1.5 to 2.0 feet, and then homogenized the sample before it was split and placed in Air Force and TechLaw sample containers. Sample volumes filled an 8 oz. glass jar. The TechLaw contractor collected the surface soil sample from the auger for the EPA analyses. Equipment was decontaminated by cleaning with laboratory-grade detergent and water, followed by a rinse with deionized water. One equipment rinsate blank was collected for analysis by the U.S. EPA.

After the sample containers were filled, the containers were labeled and placed in a cooler. Samples were packaged in bubble wrap and then plastic bags, and stored in coolers filled with ice packaged in double sealed plastic bags. Custody seals were affixed to the front and back of each cooler. The samples for pesticide analyses were sent via overnight delivery on March 21, 2001 to Clayton Environmental Consultants, Inc. in Novi, Michigan.

3.2 Quality Control/Quality Assurance Samples

Quality control samples were collected in accordance with the Basewide Quality Assurance Project Plan (QAPP) (HydroGeoLogic, 1998). Field Duplicates for the U.S. EPA were collected at a rate of one per ten samples (EPA samples Y0554 and Y0560). The equipment blank (sample Y0556) was collected and analyzed to evaluate the adequacy of decontamination procedures. The equipment blank sample was collected by pouring deionized water over the sampling trowel and collecting it in a one-liter amber container.

Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed to measure accuracy

and precision. Sufficient volumes (samples Y0553 and Y0562) were collected so that MS/MSD analysis could be performed at a frequency of 10 percent. One Performance Evaluation (PE) sample (sample Y0557), containing Dieldrin and other selected pesticide analytes was shipped to Clayton Environmental Consulting, Inc. for analysis to further assess the quality the CLP laboratory's performance. The PE sample was supplied by the U.S. EPA. Table 2 summarizes the quality control samples collected at each soil sampling location.

4.0 Analytical Results

Soil samples collected by TechLaw were analyzed by Clayton Environmental Consulting, Inc. in accordance with CLP OLM04.2 Pesticides/PCB method). The analytical results for the samples collected by the Air Force were supplied to TechLaw by the Air Force's contractor, Montgomery Watson of Walnut Creek, California, in a data package dated 24 April 2001. Air Force samples were analyzed by EPA Method 8081A analyses. The Air Force's analytical results were validated for Montgomery Watson by Laboratory Data Consultants of Carlsbad, CA.

4.1 Organochlorine Pesticides

All soil samples collected by TechLaw were analyzed for the organochlorine pesticides using the CLP OLM04.2 Pesticides/PCB method. The Reporting Limits for these analyses ranged from 3.5 to 4.1 ug/Kg, with one sample at a higher Reporting Limit of 5.9 ug/Kg (Table 1A, Appendix C). Data values below this Reporting Limit are considered as being quantitatively unreliable and therefore the chemical concentrations are regarded as "not detected" . For these "non-detect" results, they are listed as the Reporting Limit for each pesticide in each sample, with a laboratory data qualifier of U (undetected); however, several samples showed detections of analytes below the Reporting Limits and are appropriately qualified (see Appendix C).

The only reported detections in field samples collected for U.S. EPA analyses occurred in samples Y0555, Y0562, Y0564 and Y0565. Sample Y0555 was subsequently validated and the reported value qualified as "non-detect" due to analytical uncertainties.

- Sample Y0562 was collected at sample location SS-4 at a depth of 0.5 ft bgs. Pesticides present include 4,4'-DDT (3.3 ug/Kg) and Methoxychlor (15 ug/Kg), both of which are qualified as being below the Reporting Limit but above the Detection Limit.
- Sample Y0564 was collected at sample location SS-5 at a sample depth of 0.5 ft bgs. This sample has a 4,4'-DDE concentration of 5.8 ug/Kg .
- Sample Y0565 was collected at sample location SS-5 at a depth of 1.5 - 2 ft bgs. This sample has a Dieldrin concentration of 6.8 ug/kg.

Several other chlorinated pesticides were initially reported by the laboratory at lower concentrations in these samples but were qualified as undetected after data validation.

The Air Force data report no concentrations above Reporting Limits, which range from 2.1 to 2.4 ug/Kg; the Air Force Method Detection Limit is reported as 0.1 ug/kg. Table 3 compares the

split sampling data results for the Air Force and the U.S. EPA samples. To facilitate the quantitative comparisons, the U.S. EPA data have been converted from the "U" qualifier designation for non-detect values to a "less-than" ("<") designation, again referenced to the Reporting Limit values.

4.2 Performance Evaluation (PE) Sample

The PE sample for organochlorine pesticide analyses was provided by the U.S. EPA Region 9 Quality Assurance Office, and analyzed for levels of organochlorine pesticide compounds by the Clayton Environmental Consultants laboratory. The sample was prepared according to the procedure described in the Split Sampling Plan for the March 2001 Sampling Event, dated February 16, 2001. The sample was prepared in the field by Mr. Robert Ponce of TRC, under subcontract to TechLaw. PE sample results are presented in Table 4. The information on the range of Acceptable Limits was supplied for this report by the U.S. EPA Region 9 Quality Assurance Office.

4.3 Quality Control

Data validation was conducted on the pesticide analyses for the U.S. EPA by ICF Consulting, Inc./Laboratory Data Consultants, Inc. Data validation reports are presented in Appendix E. The data was validated according to the U.S. EPA Contract Laboratory Program's Functional Guidelines for Organic Data Review. With the exception of a few reported detections of organochlorine pesticides below the Reporting Limits, no deficiencies in the quality of the reported data were identified.

5.0 Conclusions and Recommendations

The EPA soils analyses found several organochlorine pesticides in a few soil samples at low concentrations. The EPA soil sample at SS-5 from a 1.5 to 2.0-foot depth has a validated concentration of Dieldrin of 6.8 ug/kg. The corresponding split sample analyzed by the Air Force is reported as <2.1 ug/Kg. Air Force split samples found no reportable concentrations of the Dieldrin; other chlorinated pesticides were specifically excluded from the analyte list by the Air Force. A cursory review of the chromatogram traces for the Air Force analyses shows no indications of Dieldrin. The detection limit associated with Air Force results is reported as 0.1 ug/kg. The difference in these two observations should not be regarded as significant because of the intrinsic uncertainties associated with the heterogeneity of soils as well as the soil sorption of low solubility chemicals on the meso-scale (a few inches to a few feet scale), which make such a comparison moot for a single set of two samples.

The Dieldrin concentration data are useful in a preliminarily context to identify potential Dieldrin contamination concerns. The U.S. EPA Region 9 Preliminary Remediation Goals (PRGs) for Dieldrin in residential and industrial soils are 30 ug/kg and 150 ug/kg, respectively. The measured organochlorine pesticide values, including the non-detect values, are all lower than these U.S. EPA Region 9 PRGs.. However, the sampling density of six locations, with one

sample at each of two depths, is not sufficient to conduct human health or ecological risk assessments. In perspective, low concentrations of chlorinated pesticides may be present from applications before the mid-1970s when these chemical were banned from general uses.

The samples analyzed in this split sampling program represent a set of diverse activities. Dieldrin was still approved as an insecticide for termite control until 1987, and Dieldrin is considered a persistent pesticide and rather immobile in most root-zone soil environments. The finding of Dieldrin at a depth of approximately 2-feet at location SS-5 near a dwelling is then consistent with a probable past application. The presence of 4,4'-DDE (5.8 ug/Kg) in the surface soil sample at the same location is consistent with insecticide uses in this location. While location SS-6 is also in a housing area, it appears to be some distance from the house where the insecticides would have been injected into the soil around the foundation. Other locations represent possible drainage courses in pesticide handling and application areas. While these are logical locations to initially sample surface soil samples for the less mobile organochlorine pesticides, the surface soils may also have been significantly eroded by runoff after some 12 years (since 1987) such that any contamination is now dispersed. (Note: An Air Force reviewer comments that the samples at SS-1were collected from a grass area where no erosion was evident, and samples from locations SS-2 and SS-3 were collected from a depression where soil accumulates. The reviewer further notes that the samples at SS-4 were collected from a flat ground surface in a maintenance yard, and samples at locations SS-5 and SS-6 were collected from low areas that have not been visibly eroded. While these observations are useful to describe current site conditions, erosion along with landscaping or maintenance over 12 years still offer the possibility that the presence of Dieldrin has now been obscured in locations SS-1 through SS-3 and SS-6. Samples at locations SS-4 and SS-5 remain as collected from areas where pesticides were logically handled or applied, respectively, and their continued presence is reasonable.)

Tables

Table 1

Sample Summary
Split Sampling Event, March, 2001
George Air Force Base
(All samples collected on 21 March, 2001)

	Sampling Location, Depth	GAFB Analyses by EPA Method 8081A, Sample Number	EPA Analyses by CLP OLM04.2 Pesticides/PCB, Sample Number
Golf Course	SS-1, 0.5 feet 1.5-2.0 feet	Not sampled 01-2597-2	Y0552 Y0553
Golf Course	SS-2, 0.5 feet 1.5-2.0 feet	Not sampled 01-2597-3	Y0555 Y0558
Golf Course	SS-3, 0.5 feet 1.5-2.0 feet	Not sampled 01-2597-4	Y0559 Y0561
Golf Course	SS-4, 0.5 feet 1.5-2.0 feet	Not sampled 01-2597-5	Y0562 Y0563
Housing Area	SS-5, 0.5 feet 1.5-2.0 feet	Not sampled 01-2597-6	Y0564 Y0565
Housing Area	SS-6, 0.5 feet 1.5-2.0 feet	Not sampled 01-2597-7	Y0566 Y0567

Table 2

Quality Control Samples
Split Sampling Event, March, 2001
George Air Force Base

Location (Sample Number)	Sample Type	Analysis
SS-1 (Y0553 - 1.5 - 2 ft bgs)	MS/MSD	CLP OLM04.2 Pesticides/PCB
SS-4 (Y0562 - 0.5 ft bgs)	MS	CLP OLM04.2 Pesticides/PCB
SS-1 (Y0554 - 1.5-2 ft bgs)	Field Duplicate	CLP OLM04.2 Pesticides/PCB
SS-2 (Y0556)	Equipment Blank	CLP OLM04.2 Pesticides/PCB
NA (PBLKW1)	Method Blank	CLP OLM04.2 Pesticides/PCB
NA (Y0557)	Performance Evaluation	CLP OLM04.2 Pesticides/PCB
SS-3 (Y0560, 0.5 ft bgs)	Field Duplicate	CLP OLM04.2 Pesticides/PCB

Table 4

Organochlorine Pesticide Performance Evaluation Results by CLP OLM04.2 Pesticides/PCB Split Sampling Event, March 2001 George Air Force Base

EPA Sample Number	Y0557	
Sampling Location	Performance Evaluation Sample	
Matrix	Soil	
Units	ug/kg	
	Measured Value	Acceptable Limits
alpha-BHC	16	9.4 to 35.4
beta-BHC	7.2	2.8 to 9.0
Heptachlor	1.3J	3.4 to 11.5
Aldrin	19	9.1 to 24.7
Dieldrin	26	12.4 to 29.4
4,4'-DDE	32	10.3 to 36.7
Endrin	72	23.5 to 122
4,4'-DDD	67	24.8 to 81.0
Endosulfan sulfate	29	20.5 to 59.3
Methoxychlor	25	NL to 74.2
gamma-Chlordane	8.5	4.1 to 8.8

1. Only analytes actually present in the PE samples are listed in this table. All other analytes reported as non-detected by the laboratory.

Table 3
Comparison of Dieldrin Analytical Results
Split Sampling Event, March, 2001
Samples Collected at 1.5 to 2.0-Foot Depths
(Note: Dieldrin values reflect Reporting Limits)

George Air Force Base

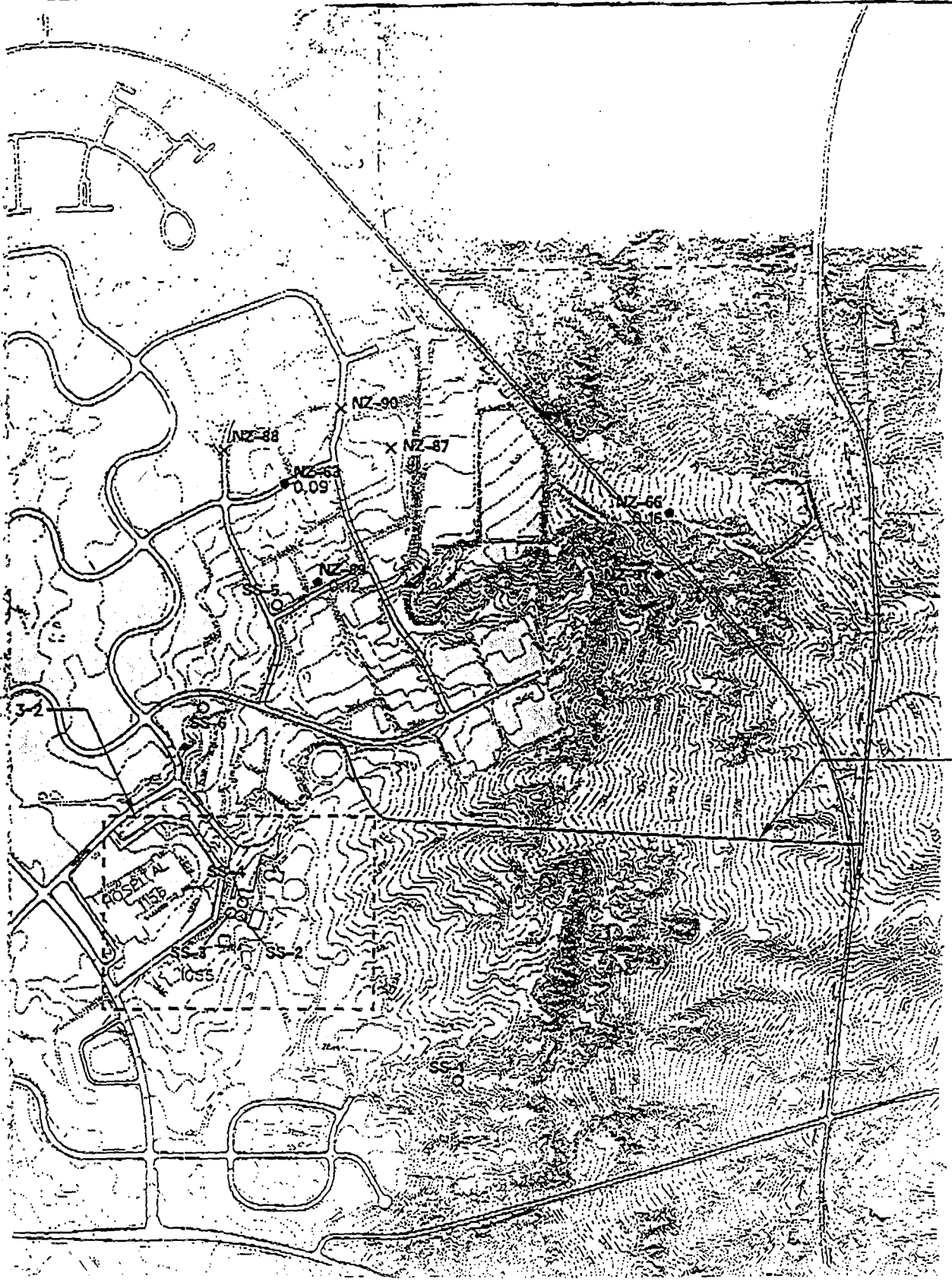
Sampling Location	SS-1		SS-2		SS-3		SS-4	
Matrix	soil,		soil		soil		soil	
Units	ug/kg		ug/kg		ug/kg		ug/kg	
	GAFB 01-2597-2	U.S. EPA Y0553	GAFB 01-2597-3	U.S. EPA Y0558	GAFB 01-2597-4	U.S. EPA Y0561	GAFB 01-2597-5	U.S. EPA Y0563
Organochlorine pesticides (Dieldrin)	<2.1	<3.6	<2.4	<3.7	<2.2	<3.5	<2.1	<3.4

Sampling Location	SS-5		SS-6		SS-7 (field duplicate of SS-1)	
Matrix	soil		soil		soil	
Units	ug/kg		ug/kg		ug/kg	
	GAFB 01-2597-6	U.S. EPA Y0565	GAFB 01-2597-7	U.S. EPA Y0567	GAFB 01-2597-8	U.S. EPA Y0554
Organochlorine pesticides (Dieldrin)	<2.1	**6.8**	<2.1	< 3.6	<2.1	<3.5

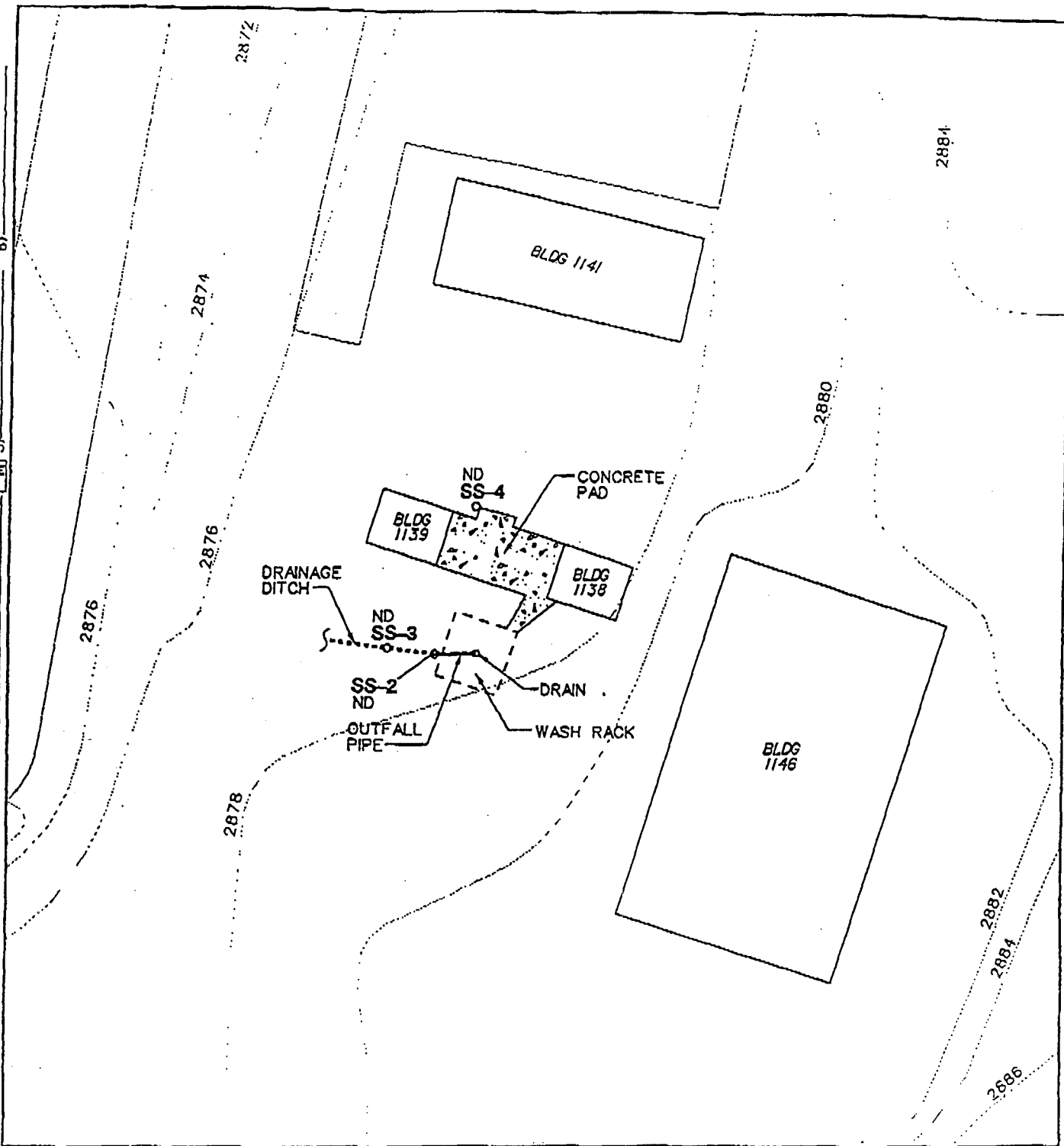
Attachment A

Sample Location Map

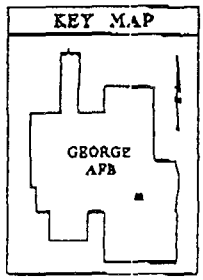
Note: These maps showing sample locations was provided by Montgomery Watson Harza as draft figures from a sampling report that is not complete as of December 14, 2001. This figure shows both soil sampling locations (SS) and groundwater sampling locations, but only soil sampling analyses are included in this report.



MONTGOMERY WATSON Walnut Creek, California	GEORGE AIR FORCE BASE GROUNDWATER PESTICIDE INVESTIGATION SOIL SAMPLE LOCATIONS	Figure 3-1



KEY MAP



LEGEND:

- o SOIL SAMPLE LOCATION (1.5 TO 2.0 FEET BELOW GROUND SURFACE) WITH DIELDRIN CONCENTRATION
- ND NON DETECT
- —2880— GROUND SURFACE ELEVATION

N

0 20 40

SCALE IN FEET

MWH
MONTGOMERY WATSON HARZA

GEORGE AIR FORCE BASE
GROUNDWATER PESTICIDE INVESTIGATION
SOIL SAMPLE LOCATIONS

Figure 3-2

1) gasizev.dgn 2) 3) 4) 5) 6)
REFERENCE FILES
SCALE: 40.000000:1.000000
DATE: 12/14/01
FILE: K:\Projects\mars\prj\gab\dgn\figp-tno.dgn
JOB No.

Attachment B

Chain of Custody Forms

TRC

Date: 3/22/01 | Ltr logs: & 3

To: Jim Cureton | From: Bobby Ponce

Org: Tech Law | Office: TRC - Irvine

Phone No: (415) 281-8735 | Phone No: (949) 753-0101

Attn to:

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No.: 29057

Sr.

4. Date Shipped: 3/21/01 | Carrier: Fed Ex

Airbill Number: 8215 2045 4007

5. Ship To: (CLAYTN)
Clayton Environmental Consultants, Inc.
22345 Rocthel Drive
Novi, MI 48375
(248) 344-1770
ATTN: Karen Coonan

NOTE: Analyze for Pesticides only: analyze PE sample Y0557

Site Name: George Air Force Base

City, State: Victorville, CA | Site Spill ID:

3. Purpose: Lead: SF, PRP, ST, FED | Early Action: CLEM, PA, REM, RI, SI, ESI | Long-Term Action: FS, RD, RA, O&M, NPLO

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. Other (specify in Column D)
N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other	B Conc Low Med High	C Sample Type Comp / Grab	D Preservative (from Box 7) Other	E RAS Analysis: VOA	BNA	Pest/PCB	High Only	ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval, — = Not a QC Sample)
Y0552	5	Low	Grab	5			X			Golf	SS-1 (0.5 fbg)	3/21/01 11:15		RP	
Y0553	5	Low	Grab	5			X			"	SS-1 (1.5-2.0 fbg)	3/21/01 11:25		RP	
Y0554	5	Low	Grab	5			X			Low Spot	SS-1 (1.5-2.0 fbg)	3/21/01 11:25		RP	D
Y0555	5	Low	Grab	5			X			"	SS-2 (0.5 fbg)	3/21/01 11:46		RP	
Y0556	5	Low	Grab	5			X			"	SS-2 (Field Blank)	3/21/01 12:05		RP	B
Y0557	5	Low	Grab	5			X			Low Spot	SS-2 (0.5-2.0 fbg)	3/21/01 11:50		RP	
Y0559	5	Low	Grab	5			X			"	SS-3 (0.5 fbg)	3/21/01 12:13		RP	
Y0560	5	Low	Grab	5			X			BLG 1138-1139	SS-3 (0.5 fbg)	3/21/01 12:14		RP	D
Y0561	5	Low	Grab	5			X			"	SS-3 (1.5-2.0 fbg)	3/21/01 12:20		RP	
Y0562	5	Low	Grab	5			X			Hoosiers	SS-4 (0.5 fbg)	3/21/01 12:30		RP	

Shipment for Case Complete? (Y/N): Y

Page: 1 of 2

Sample(s) to be Used for Laboratory QC: (MS/MSD) Y0553 (MS/MSD), Y0562 (MS/MSD)

Additional Sampler Signatures:

Chain of Custody Seal Number(s): Custody seal on cooler

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert J. Ponce	3/21/01 16:00			3/21/01	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2 (2-99)

See Reverse for Additional Standard Instructions
*See Reverse for Purpose Code Definitions

393837

A21-012-15 REV

Mar 27 01 8:55 P.01

EPA United States Environmental Protection Agency — Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record (For Organic CLP Analysis)

Case No.:

1. Project Code	Account Code	2. Region No.: 9	Sampling Co.: TRC	4a. Date Shipped: 3/21/01	Carrier: Fed Ex
Regional Information		Sampler (Name): Robert J. Ponce, Jr.		Airbill Number: 8215 2645 4007	
For Superfund Program		Sampler Signature: Robert J. Ponce Jr.		5. Ship To: (COLAYTN) Clayton Environmental Consultants Inc	
Site Name: George Air Force Base		3. Purpose: Early Action — Lead: SF, PRP, ST, FED; CLEM, PA, REM, AI, SI, ESI. Long-Term Action: FS, RD, RA, O&M, NPL.		22345 Roethel Drive NOTE: Analyze for Novi, MI 48375 Pesticides only! (248) 344-1770 analyze PE sample Y055	
City, State: Victorville, CA	Site Spill ID			ATTN: Karen Goonan	

6. Matrix (Enter in Column A): 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Field, 5. Soil/Sediment, 6. Oil (High only), 7. Waste (High only), 8. Other (specify in Column A)

7. Preservative (Enter in Column C): 1. HCl, 2. HNO3, 3. NaHSO4, 4. H2SO4, 5. NaOH, 6. Other (specify in Column D), N. Not Preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6)	B Conc Low Med High	C Sample Type: Comp / Grab	D Preservative (from Box 7)	E RAS Analysis: VOA	BNA	Pest/PCB	High Only	ARCV TOX	F Regional Specific Tracking Number or Tag Number	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval, N = Not a QC Sample)
Y0563	5	Low	Grab	5			X			Hassig	SS-9 (1.5-2.0ft)	3/21/01 12:35		RP	
Y0564	5	Low	Grab	5			X			New Drilling well	SS-5 (0.5-1ft)	3/21/01 13:20		RP	
Y0565	5	Low	Grab	5			X			"	SS-5 (0.5-2.0ft)	3/21/01 13:25		RP	
Y0566	5	Low	Grab	5			X			"	SS-6 (0.5-2.0ft)	3/21/01 13:00		RP	
Y0567	5	Low	Grab	5			X			"	SS-6 (0.5-2.0ft)	3/21/01 13:10		RP	

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC: (MS/MSD)	Additional Sampler Signatures	Chain of Custody Seal Number(s)
	2 of 2			Custody seal on cooler

Chain of Custody Record

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert J. Ponce Jr.	3/21/01 16:00			3/21/01 1635	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Distribution: Blue - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

See Reverse for Additional Standard Instructions
See Reverse for Purpose Code Definitions

TRC

To: Jim Cureton	Date: 3/22/01 / # of Pages: 4
Co: TechLaw	From: Bobby Ponce
Phone/Fax: (415) 281-8735	Office: TRC - Irvine
	Phone: (949) 753-0101

PMENT INFORMATION

(Fax) 415

DATE:	3/21/01	# OF PAGES:	1
~~TO: CAXL YORTS, ASCO COORDINATOR~~ FROM		~~FROM~~ TO/From:	Robert Ponce
CO.:	EPA REGION 9 (P-3-2)	CO.:	TRC
PHONE #:	(415) 744-1498	PHONE #:	(949) 753-0101
FAX #:	(415) 744-1476	FAX #:	(949) 753-0111

//

CASE #: 29057 LAB NAME: Clayton Environmental Consultants

COOLERS: 1 SHIPPING DATE: 3/21/01

CARRIER: Fed Ex AIRBILL #: 8215 2045 4007

# SAMPLES	CONC/MATRIX	ANALYSES
14	Low/Soil	Pesticides (CLP)
1	Low/~~Soil~~ RP Water	Pesticides (CLP)

Is this sampling event complete with this shipment? (Y) N

COMMENTS: PE sample Y0557 at Clayton Environmental Consultants

//

CASE #: LAB NAME:

COOLERS: SHIPPING DATE:

CARRIER: AIRBILL #:

# SAMPLES	CONC/MATRIX	ANALYSES

Is this sampling event complete with this shipment? Y N

COMMENTS:

FIELD QA/QC SUMMARY FORM

Instructions: Complete one form per laboratory and per matrix for each sampling event.

DATE: 3/21/01
Sampler: Robert J. Pence, Jr.
Office: TRC - Irvine
Phone #: (949) 753-0101

Site: George Air Force Base
Case/SAS#: 29057
Laboratory: Clayton Environmental Consultants, Inc.

Matrix: (check one) ___ Groundwater; ___ Surface Water; X Surface soil; ___ Subsurface soil; ___ Air; ___ Other

I. BLANKS

Sample:	Type (check one)	Date Collected
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	

II. BACKGROUND SAMPLES

Sample #	Date Collected

III. LAB QC SAMPLES

Sample #	Date Collected
Y0562 (MS/MSD)	3/21/01
Y0557 (PE)	

IV. DUPLICATES

Sample:	Matches Sample:	Date Collected	Type (choose one)
Y0560	Y0559	3/21/01	___ a/ ___ b/ ___ c/ ___ d
			___ a/ ___ b/ ___ c/ ___ d
			___ a/ ___ b/ ___ c/ ___ d
			___ a/ ___ b/ ___ c/ ___ d
			___ a/ ___ b/ ___ c/ ___ d
			___ a/ ___ b/ ___ c/ ___ d

a = composite split
b = consecutive
c = colocated
d= consecutive soil sleeves

V. Checklist of Field Problems Encountered

	None	Sample # / Dates of Occurrence / Comments
___	Pumping Equipment Problems	
___	Sample Filtering Problems	
___	Less Than Required Sample Volume	
___	Low Flow/Recharge Rates	
___	Preservation Problem	
___	Samples Not Shipped in 24 hours	
	Federal Express Delay	

FIELD QA/QC SUMMARY FORM

Instructions: Complete one form per laboratory and per matrix for each sampling event.

DATE: 3/21/01
Sampler: Robert J. Pearce, Jr.
Office:
Phone #:

Site: George Air Force Base
Case/SAS#: 29057
Laboratory: Clayton Environmental Consultants, Inc.

Matrix (check one): ___ Groundwater ___ Surface soil ___ Air ___ Surface Water X Subsurface soil ___ Other

I. BLANKS

Sample:	Type (check one)	Date Collected
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	
	___ Equip ___ Field ___ Travel	

II. BACKGROUND SAMPLES

Sample #	Date Collected

III. LAB QC SAMPLES

Sample #	Date Collected
Y0553 (MS/MSD)	3/21/01

IV. DUPLICATES

Sample:	Matches Sample:	Date Collected	Type (choose one)
Y0554	Y0553	3/21/01	___ a/ ___ b/ ___ c/ ___ d
			___ a/ ___ b/ ___ c/ ___ d
			___ a/ ___ b/ ___ c/ ___ d
			___ a/ ___ b/ ___ c/ ___ d
			___ a/ ___ b/ ___ c/ ___ d
			___ a/ ___ b/ ___ c/ ___ d

a = composite split
b = consecutive
c = colocated
d = consecutive soil sleeves

V. Checklist of Field Problems Encountered

	Note	Sample # / Dates of Occurrence / Comments
___	Pumping Equipment Problems	
___	Sample Filtering Problems	
___	Less Than Required Sample Volume	
___	Low Flow/Recharge Rates	
___	Preservation Problem	
___	Samples Not Shipped in 24 hours	
___	Federal Express Delay	

FIELD QA/QC SUMMARY FORM

Instructions: Complete one form per laboratory and per matrix for each sampling event.

DATE: 3/21/01
Sampler: Robert Ponce Jr.
Office: TRC - Irvine
Phone #: (949) 753-0101

Site: George Air Force Base
Case/SAS#: 29057
Laboratory: Clayton Environmental Consultants, Inc.

Matrix: (check one) ___ Groundwater ___ Surface Water ___ Surface soil ___ Subsurface soil ___ Air ___X___ Other Distilled Water

I. BLANKS

Sample:		Type (check one)			Date Collected
Y0556	X	Equip	Field	Travel	3/21/01
		Equip	Field	Travel	
		Equip	Field	Travel	
		Equip	Field	Travel	
		Equip	Field	Travel	
		Equip	Field	Travel	
		Equip	Field	Travel	
		Equip	Field	Travel	
		Equip	Field	Travel	
		Equip	Field	Travel	

II. BACKGROUND SAMPLES

Sample #	Date Collected

III. LAB QC SAMPLES

Sample #	Date Collected

IV. DUPLICATES

Sample	Matches Sample	Date Collected	Type (choose one)
			a/ b/ c/ d
			a/ b/ c/ d
			a/ b/ c/ d
			a/ b/ c/ d
			a/ b/ c/ d
			a/ b/ c/ d

a = composite split
b = consecutive
c = colocated
d= consecutive soil sleeves

V. Checklist of Field Problems Encountered

	None	Sample # / Dates of Occurrence / Comments
	Pumping Equipment Problems	
	Sample Filtering Problems	
	Less Than Required Sample Volume	
	Low Flow Recharge Rates	
	Preservation Problem	
	Samples Not Shipped in 24 hours	
	Federal Express Delay	

Attachment C

Laboratory Reports

VALIDATED DATA

Table 1A

Case No. 29057 SDG No. : Y0552
Site GEORGE AIR FORCE BASE
Lab CLAYTON ENVL CONSULT, INC
Date 5/25/01

Concentration in ug/Kg

Station Location	SS-1		SS-1		SS-1		SS-2		SS-2		SS-3		SS-3		SS-3	
Sample Depth below surface	0.5		1.5 to 2.0		1.5 to 2.0		0.5		1.5 to 2,0		0.5		0.5		1.5 to 2.0	
Sample ID	Y0552		Y0553, D1		Y0554, D1		Y0555		Y0558		Y0559, D2		Y0560, D2		Y0561	
Collection Date	03/21/2001		03/21/2001		03/21/2001		03/21/2001		03/21/2001		03/21/2001		03/21/2001		03/21/2001	
Dilution Factor	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
Pesticide/PCB Compound	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**
alpha-BHC	2.0U		1.8U		1.8U		3.0U		1.9U		1.9U		1.9U		1.8U	
beta-BHC	2.0U		1.8U		1.8U		3.0U		1.9U		1.9U		1.9U		1.8U	
delta-BHC	2.0U		1.8U		1.8U		3.0U		1.9U		1.9U		1.9U		1.8U	
gamma-BHC (Lindane)	2.0U		1.8U		1.8U		3.0U		1.9U		1.9U		1.9U		1.8U	
Heptachlor	2.0U		1.8U		1.8U		3.0U		1.9U		1.9U		1.9U		1.8U	
Aldrin	2.0U		1.8U		1.8U		3.0U		1.9U		1.9U		1.9U		1.8U	
Heptachlor epoxide	2.0U		1.8U		1.8U		3.0U		1.9U		1.9U		1.9U		1.8U	
Endosulfan I	2.0U		1.8U		1.8U		3.0U		1.9U		1.9U		1.9U		1.8U	
Dieldrin	4.0U		3.6U		3.5U		5.9U		3.7U		3.7U		3.7U		3.5U	
4,4'-DDE	4.0U		3.6U		3.5U		5.9U		3.7U		3.7U		3.7U		3.5U	
Endrin	4.0U		3.6U		3.5U		5.9U		3.7U		3.7U		3.7U		3.5U	
Endosulfan II	4.0U		3.6U		3.5U		5.9U		3.7U		3.7U		3.7U		3.5U	
4,4'-DDD	4.0U		3.6U		3.5U		5.9U		3.7U		3.7U		3.7U		3.5U	
Endosulfan sulfate	4.0U		3.6U		3.5U		5.9U		3.7U		3.7U		3.7U		3.5U	
4,4'-DDT	4.0U		3.6U		3.5U		5.9U		3.7U		3.7U		3.7U		3.5U	
Methoxychlor	20U		18U		18U		30U		19U		19U		19U		18U	
Endrin ketone	4.0U		3.6U		3.5U		5.9U		3.7U		3.7U		3.7U		3.5U	
Endrin aldehyde	4.0U		3.6U		3.5U		5.9U		3.7U		3.7U		3.7U		3.5U	
alpha-Chlordane	2.0U		1.8U		1.8U		3.0U		1.9U		1.9U		1.9U		1.8U	
gamma-Chlordane	2.0U		1.8U		1.8U		3.0U		1.9U		1.9U		1.9U		1.8U	
Toxaphene	200U		180U		180U		300U		190U		190U		190U		180U	
Aroclor-1016	40U		36U		35U		59U		37U		37U		37U		35U	
Aroclor-1221	81U		73U		72U		120U		74U		74U		74U		71U	
Aroclor-1232	40U		36U		35U		59U		37U		37U		37U		35U	
Aroclor-1242	40U		36U		35U		59U		37U		37U		37U		35U	
Aroclor-1248	40U		36U		35U		59U		37U		37U		37U		35U	
Aroclor-1254	40U		36U		35U		59U		37U		37U		37U		35U	
Aroclor-1260	40U		36U		35U		59U		37U		37U		37U		35U	
Percent Solids	83%		92%		93%		56%		90%		90%		90%		95%	

Validation Qualifiers - Refer to Data Qualifiers in Table 1B.

CRQL - Contract Required Quantitation Limit N/A - Not Applicable, NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank, TB - Trip Blank,
BG - Background Sample, PE - Performance Evaluation

VALIDATED DATA

Table 1A

Case No. : 29057 SDG No. : Y0552
Site : GEORGE AIR FORCE BASE
Lab : CLAYTON ENVL CONSULT, INC
Date : 5/25/01

Concentration in ug/Kg

Station Location :	SS-4		SS-4		SS-5		SS-5		SS.6		SS-6	
ple Depth, feet below surface	0.5		1.5 to 2.0		0.5		1.5 to 2.0		0.5		1.5 to 2.0	
Sample ID :	Y0562		Y0563		Y0564		Y0565		Y0566		Y0567	
Collection Date :	03/21/2001		03/21/2001		03/21/2001		03/21/2001		03/21/2001		03/21/2001	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0		1.0	
Pesticide/PCB Compound	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**
alpha-BHC	1.8U		1.8U		1.8U		1.8U		2.1U		1.9U	
beta-BHC	1.8U		1.8U		1.8U		1.8U		2.1U		1.9U	
delta-BHC	1.8U		1.8U		1.8U		1.8U		2.1U		1.9U	
gamma-BHC (Lindane)	1.8U		1.8U		1.8U		1.8U		2.1U		1.9U	
Heptachlor	1.8U		1.8U		1.8U		1.8U		2.1U		1.9U	
Aldrin	1.8U		1.8U		1.8U		1.8U		2.1U		1.9U	
Heptachlor epoxide	1.8U		1.8U		1.8U		1.8U		2.1U		1.9U	
Endosulfan I	1.8U		1.8U		1.8U		1.8U		2.1U		1.9U	
Dieldrin	3.6U		3.4U		3.5U		6.8		4.1U		3.6U	
4,4'-DDE	3.6U		3.4U		5.8		3.6U		4.1U		3.6U	
Endrin	3.6U		3.4U		3.5U		3.6U		4.1U		3.6U	
Endosulfan II	3.6U		3.4U		3.5U		3.6U		4.1U		3.6U	
4,4'-DDD	3.6U		3.4U		3.5U		3.6U		4.1U		3.6U	
Endosulfan sulfate	3.6U		3.4U		3.5U		3.6U		4.1U		3.6U	
4,4'-DDT	3.3L	NJ	3.4U		3.5U		3.6U		4.1U		3.6U	
Methoxychlor	15L	J	18U		18U		18U		21U		19U	
Endrin ketone	3.6U		3.4U		3.5U		3.6U		4.1U		3.6U	
Endrin aldehyde	3.6U		3.4U		3.5U		3.6U		4.1U		3.6U	
alpha-Chlordane	1.8U		1.8U		1.8U		1.8U		2.1U		1.9U	
gamma-Chlordane	1.8U		1.8U		1.8U		1.8U		2.1U		1.9U	
Toxaphene	180U		180U		180U		180U		210U		190U	
Aroclor-1016	36U		34U		35U		36U		41U		36U	
Aroclor-1221	72U		70U		71U		73U		83U		74U	
Aroclor-1232	36U		34U		35U		36U		41U		36U	
Aroclor-1242	36U		34U		35U		36U		41U		36U	
Aroclor-1248	36U		34U		35U		36U		41U		36U	
Aroclor-1254	36U		34U		35U		36U		41U		36U	
Aroclor-1260	36U		34U		35U		36U		41U		36U	
Percent Solids	93%		96%		95%		92%		81%		91%	

Val - Validity. Refer to Data Qualifiers in Table 1B.
CRQL - Contract Required Quantitation Limit, N/A - Not Applicable, NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs
FB - Field Blank, EB - Equipment Blank, TB - Trip Blank,
BG - Background Sample, PE - Performance Evaluation

VALIDATED DATA

Table 1A

Case No.: 29057 SDG No.: Y0552
Site GEORGE AIR FORCE BASE
Lab: CLAYTON ENVL CONSULT, INC
Date 5/25/01

Concentration in ug/Kg

Station Location:	PE		Method Blank		Method Blank		Method Blank		CRQL
Sample ID:	Y0557		PBLK1S		PBLK2S		PBLK3S		
Collection Date:	03/21/2001								
Dilution Factor:	1.0		1.0		1.0		1.0		
Pesticide/PCB Compound	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**	**Result**	**Val**	**Result**
alpha-BHC	16		1.7U		1.7U		1.7U		1.7
beta-BHC	7.2		1.7U		1.7U		1.7U		1.7
delta-BHC	1.7U		1.7U		1.7U		1.7U		1.7
gamma-BHC (Lindane)	1.7U		1.7U		1.7U		1.7U		1.7
Heptachlor	1.3L	J	1.7U		1.7U		1.7U		1.7
Aldrin	19		1.7U		1.7U		1.7U		1.7
Heptachlor epoxide	1.7U		1.7U		1.7U		1.7U		1.7
Endosulfan I	1.4L	J	1.7U		1.7U		1.7U		1.7
Dieldrin	26		3.3U		3.3U		3.3U		3.3
4,4'-DDE	32		3.3U		3.3U		3.3U		3.3
Endrin	71		3.3U		3.3U		3.3U		3.3
Endosulfan II	3.3U		3.3U		3.3U		3.3U		3.3
4,4'-DDD	65		3.3U		3.3U		3.3U		3.3
Endosulfan sulfate	29		3.3U		3.3U		3.3U		3.3
4,4'-DDT	3.3U		3.3U		3.3U		3.3U		3.3
Methoxychlor	25		17U		17U		17U		17
Endrin ketone	3.3U		3.3U		3.3U		3.3U		3.3
Endrin aldehyde	3.3U		3.3U		3.3U		3.3U		3.3
alpha-Chlordane	1.7U		1.7U		1.7U		1.7U		1.7
gamma-Chlordane	8.5		1.7U		1.7U		1.7U		1.7
Toxaphene	170U		170U		170U		170U		170
Aroclor-1016	33U		33U		33U		33U		33
Aroclor-1221	67U		67U		67U		67U		67
Aroclor-1232	33U		33U		33U		33U		33
Aroclor-1242	33U		33U		33U		33U		33
Aroclor-1248	33U		33U		33U		33U		33
Aroclor-1254	33U		33U		33U		33U		33
Aroclor-1260	33U		33U		33U		33U		33
Percent Solids	100%		NA		NA		NA		NA

Val - Validity Refer to Data Qualifiers in Table 1B.
CRQL - Contract Required Quantitation Limit, N/A - Not Applicable, NA - Not Analyzed

Concentration in ug/L

SS-2,		Method Blank		CRQL
Y0556, EB		PBLKW1		
03/21/2001				
1.0		1.0		
Result	**Val**	**Result**	**Val**	**Result**
0.05U		0.05U		0.05U
0.05U		0.05U		0.05U
0.05U		0.05U		0.05U
0.05U		0.05U		0.05U
0.05U		0.05U		0.05U
0.05U		0.05U		0.05U
0.05U		0.05U		0.05U
0.05U		0.05U		0.05U
0.10U		0.10U		0.10U
0.10U		0.10U		0.10U
0.10U		0.10U		0.10U
0.10U		0.10U		0.10U
0.10U		0.10U		0.10U
0.10U		0.10U		0.10U
0.10U		0.10U		0.10U
0.50U		0.50U		0.50U
0.10U		0.10U		0.10U
0.10U		0.10U		0.10U
0.05U		0.05U		0.05U
0.05U		0.05U		0.05U
5.0U		5.0U		5.0U
1.0U		1.0U		1.0U
2.0U		2.0U		2.0U
1.0U		1.0U		1.0U
1.0U		1.0U		1.0U
1.0U		1.0U		1.0U
1.0U		1.0U		1.0U
1.0U		1.0U		1.0U

D1, D2, etc. - Field Duplicate Pairs
FB - Field Blank, EB - Equipment Blank, TB - Trip Blank,
BG - Background Sample, PE - Performance Evaluation

TABLE 1B
DATA QUALIFIERS

The definitions of the following qualifiers are prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," February 1994.

NO QUALIFIERS indicate that the data are acceptable both qualitatively and quantitatively.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

L Indicates results which fall below the Contract Required Quantitation Limit. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment D

Field Log

TRC

DAILY FIELD REPORT

Job Name: George AFB	Project Number: 41-0287-03	Date: 3/~~20~~21/01 RP
Location: Victorville, CA	Weather: Sunny / Warm	Day: Wednesday
Staff: R.Ponce	Reason For Site Visit:	

Check where applicable and provide brief description of condition:

☐ Power Poles: ☐ Compound: ☐ Vacant Lot:

☐ Lock on Fence: ☐ Drums on Site (contents & date):

☐ Visual Inspection of External Well Heads:

1105- Begin sampling at location SS-1 (NE portion of golf course) sampled SS-1 = 24 inch depth; all equipment deconned (std. triple rinse w/ Alconox) sample homogenized 1145- Begin sampling at SS-2; collect surface sample; all equipment deconned prior to sampling; hand auger to 1.5 to 2 fbg; soil placed in stainless steel pan and homogenized, sample depth of SS-2 = 20 inches.; 1200- Equipment blank collected 1215- Collect surface sample at SS-3; SS-3 collected approx. 10 ft downstream of SS-2 at direction of James Chang of EPA and Harold of AFB 1230- Collect samples at SS-4 1300- Collect samples at SS-6

1325- Collect samples at SS-5; all equipment properly deconned between samples / nitrile gloves changed; all soil sampled marked with a stake with sample name. all samples homogenized prior to collection

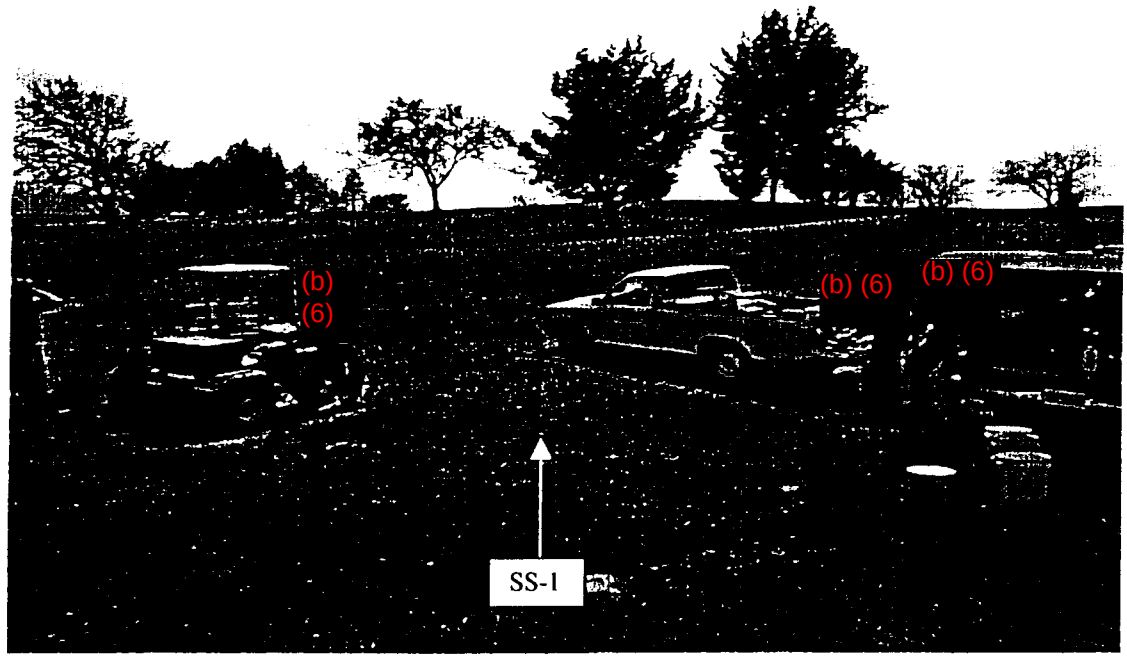


Photo 1. 3/21/01
View of Soil Sampling location SS-1 (hand auger). This sample was collected from a runoff collection area in the golf course. The technician nearest the white truck is homogenizing the sample prior to collecting a sample.

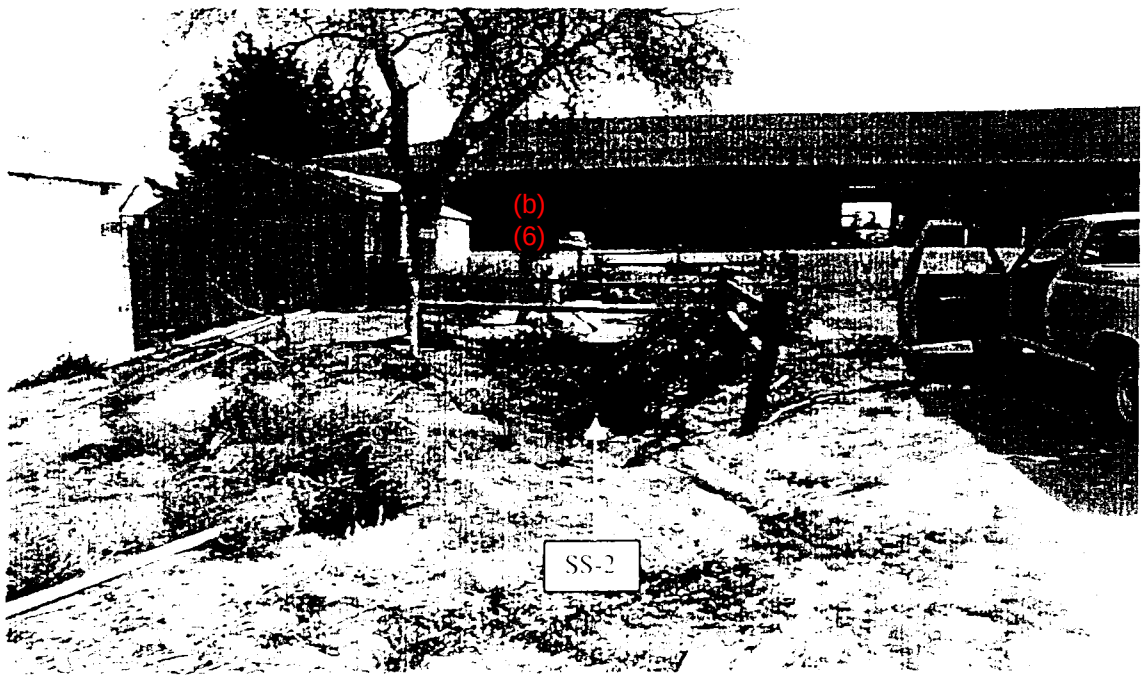


Photo 2. 3/21/01
View of Soil Sampling location SS-2. This sample was collected from a low point of a discharge area from the golf course facility.

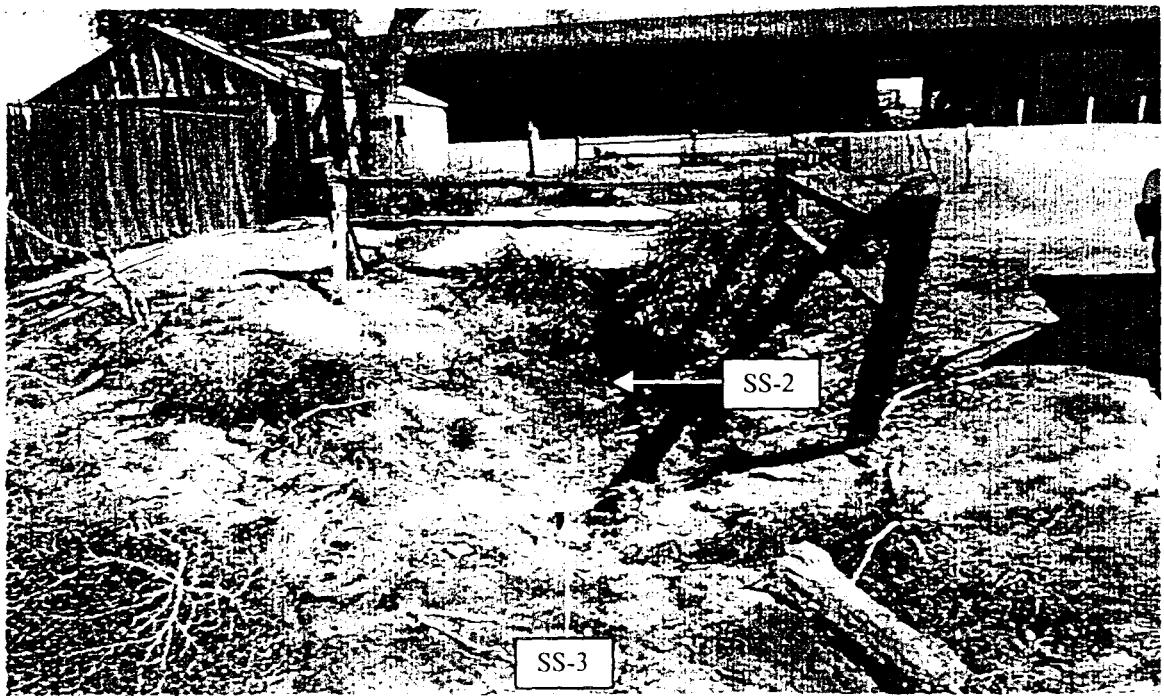


Photo 3. 3/21/01
View of Soil Sampling locations SS-2 and SS-3. This area is outside a drainage discharge low point just outside of the golf course maintenance center. SS-3 is located downstream of SS-2.

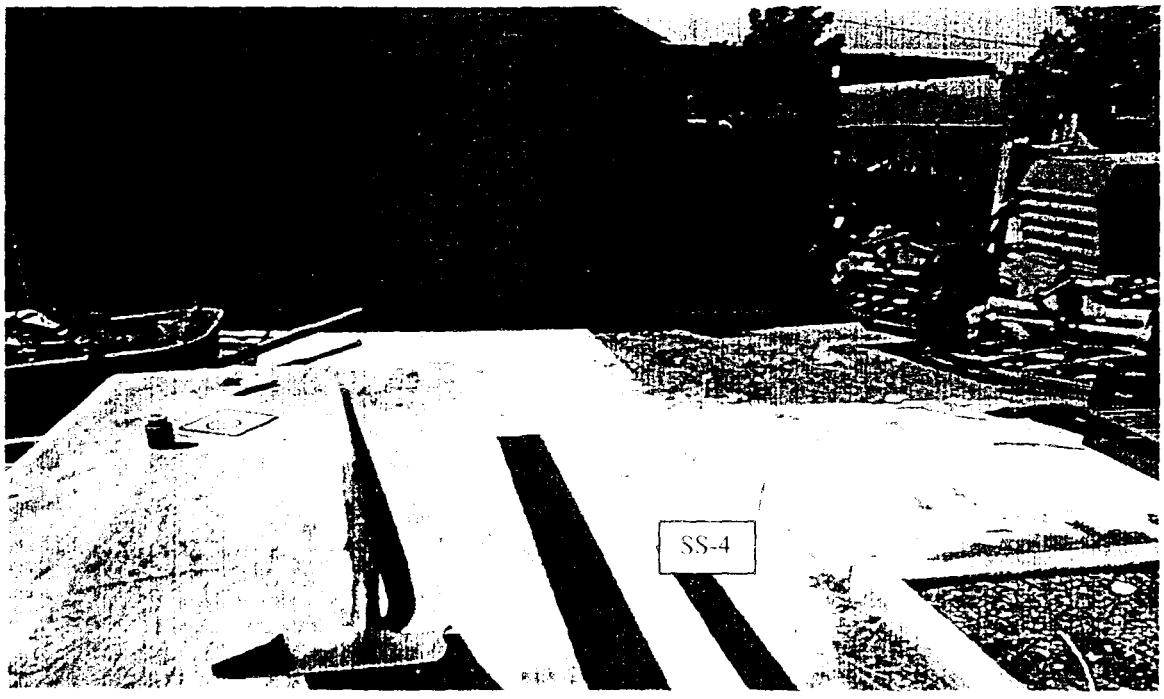


Photo 4. 3/20/01
View of Soil Sampling Location SS-4. This sample was collected in the storage yard north of the drainage area where soil samples SS-2 and SS-3 were collected.

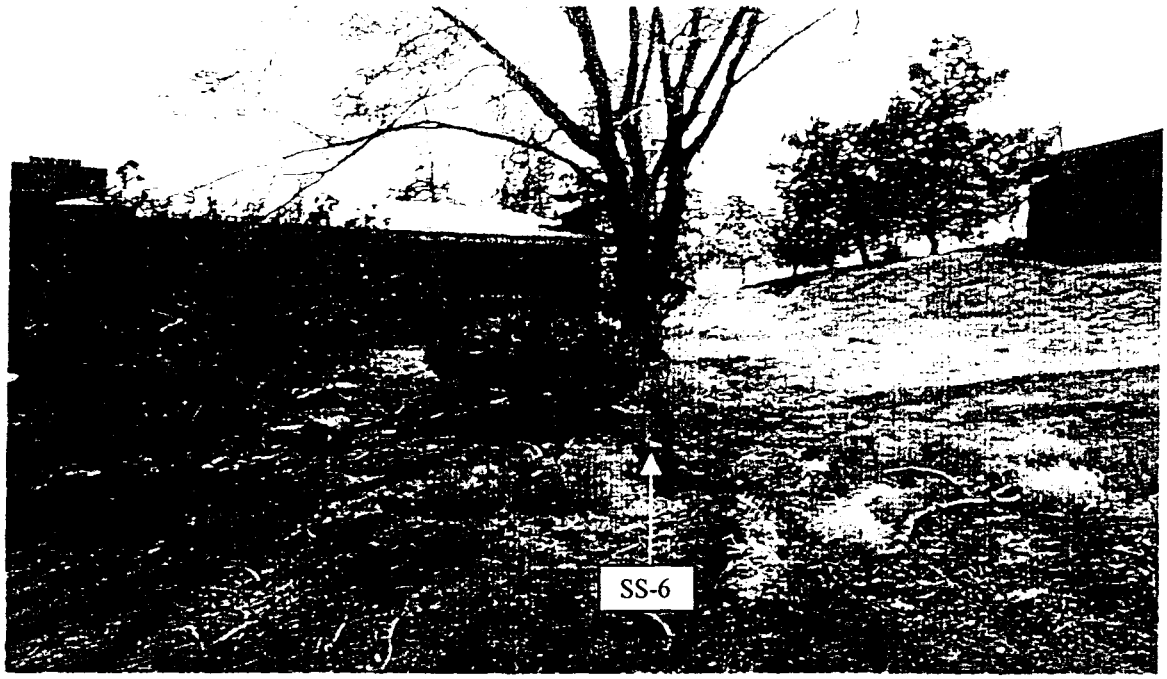


Photo 5. 3/20/01
View of soil sampling location SS-6. This sample was collected in the vacant housing area off of Montana Avenue (left: Bldg. 5108), northeast of the hospital.

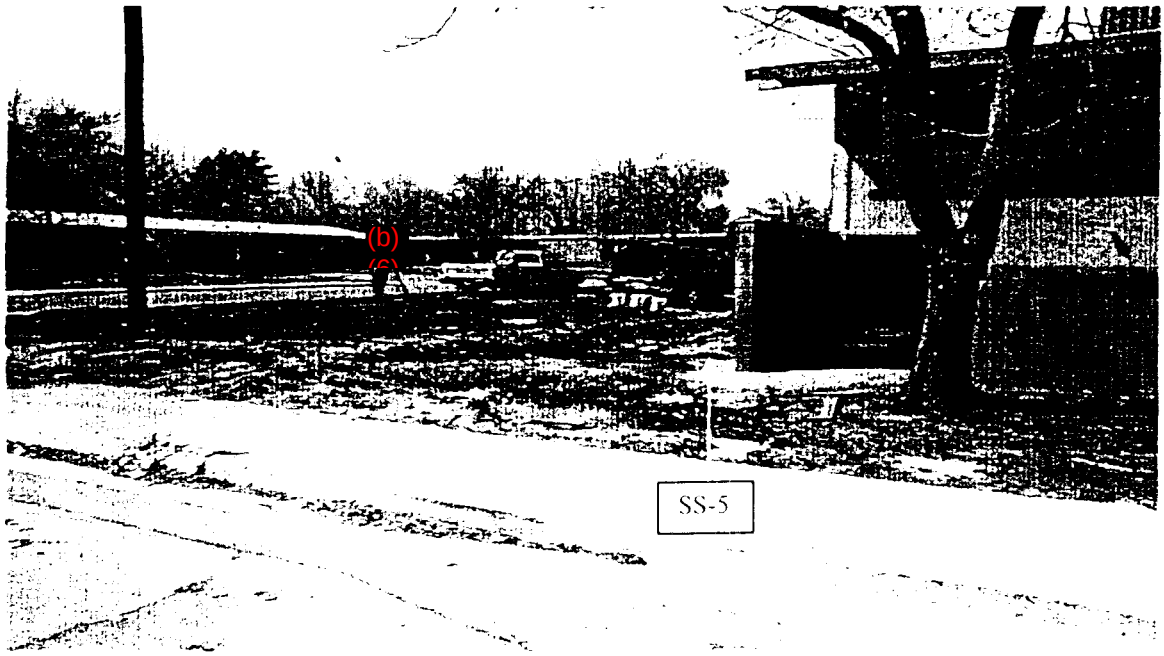


Photo 6. 3/20/01
View of soil sampling location SS-5. This sample was collected on the north corner of the intersection of Virginia Avenue and Idaho Street (right: Bldg. 5168).

Attachment E

Data Validation Reports

ICF Consulting, Inc. / Laboratory Data Consultants, Inc.
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300 Fax: (510) 412-2304

MEMORANDUM

TO: James Chang
Remedial Project Manager (RPM)
Navy Section, SFD-8-1

THROUGH: Rose Fong
ESAT Regional Project Officer
Quality Assurance (QA) Office, PMD-3

FROM: Doug Lindelof
Data Review and QA Document Review Task Manager
Environmental Services Assistance Team (ESAT)

ESAT Contract No.: 68D60005
Work Assignment No.: B0105
Technical Direction No.: B0105009139

DATE: May 25, 2001

SUBJECT: Review of Analytical Data

As requested, a tier 3 review for dieldrin was performed. Attached are comments resulting from ESAT Region 9 review of the following analytical data:

SITE:	George AFB
SITE ACCOUNT NO.:	09 Q7 LA00
CERCLIS ID NO.:	CA2570024453
CASE NO.:	29057
SDG NO.:	Y0552
LABORATORY:	Clayton Environmental Consultants, Inc (CLAYTN)
ANALYSIS:	Pesticides/PCBs
SAMPLES:	1 Water Sample and 15 Soil Samples
COLLECTION DATE:	March 21, 2001
REVIEWER:	Dung Ngo, Stella Cuenco, ESAT/ICF/LDC

The comments and qualifications presented in this report have been reviewed by the EPA Task Order Project Officer (TOPO) for the ESAT Contract, whose signature appears above.

If there are any questions, please contact Dawn Richmond (QA Program/EPA) at (415) 744-1494 or Rose Fong (QA Program/EPA) at (415) 744-1534.

Attachment
cc: Cecilia Moore, CLP PO USEPA Region 5
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [X]FYI [ ]Attention [ ]Action
SAMPLING ISSUES: [ ]Yes [X]No

Data Validation Report

Case No.: 29057 SDG No.: Y0552
Site: George AFB
Laboratory: Clayton Environmental Consultants, Inc (CLAYTN)
Reviewer: Dung Ngo, Stella Cuenco, ESAT/LDC, Inc
Date: May 25, 2001

I. Case Summary

SAMPLE INFORMATION:

Samples:	Y0552, Y0553, Y0554, Y0555, Y0556, Y0557, Y0558, Y0559, Y0560, Y0561, Y0562, Y0563, Y0564, Y0565, Y0566, Y0567
Concentration and Matrix:	Low Concentration Water and Soil
Analysis:	Pesticides/PCBs
SOW:	OLM04.2
Collection Date:	March 21, 2001
Sample Receipt Date:	March 22, 2001
Extraction Date:	March 22 through March 27, 2001
Analysis Date:	March 26 through March 28, 2001

FIELD QC:

Field Blanks (FB):	Not Provided
Equipment Blanks (EB):	Y0556
Background Samples (BG):	Not Provided
Field Duplicates (D1):	Y0553 and Y0554
(D2):	Y0559 and Y0560

METHOD BLANKS AND ASSOCIATED SAMPLES:

PBLKW1:	Y0556
PBLK1S:	Y0554, Y0557, Y0558, Y0559, Y0560, Y0563, Y0564, Y0565, Y0567, Y0553MS, and Y0553MSD
PBLK2S:	Y0553, Y0561, Y0562, Y0562MS, and Y0562MSD
PBLK3S:	Y0552, Y0555, and Y0566

TABLES:

1A:	Analytical Results with Qualifications
1B:	Data Qualifier Definitions for Organic Data Review
2:	Analyte Concentration Summary
3:	Summary of Laboratory Reported Results <½ the CRQL

CLP PO ACTION:

None

CLP PO ATTENTION:

None

SAMPLING ISSUES:

None

ADDITIONAL COMMENTS:

Standard preparation logs were missing in the data package and could not be evaluated. This information was requested from the laboratory but has not been received to date. Data are not

qualified in this report due to missing standard preparation logs. Refer to the attached telephone record log (TRL) for details.

This report was prepared in accordance with the following documents:

- the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Organics Analysis, OLM03.2, August 1994/OLM04.2, May 1999;
- ESAT Region 9 Standard Operating Procedure 902, "Guidelines for Data Review of Contract Laboratory Program Analytical Services (CLPAS) Pesticide/PCB Data Packages;" and
- "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999.

II. Validation Summary

	Acceptable/Comment	
HOLDING TIMES	Yes	
GC/MS TUNE/GC PERFORMANCE	Yes	
CALIBRATIONS	Yes	
FIELD QC	Yes	
LABORATORY BLANKS	Yes	
SURROGATES	Yes	
MATRIX SPIKE/DUPLICATES	Yes	
INTERNAL STANDARDS	Yes	
COMPOUND IDENTIFICATION	No	B
COMPOUND QUANTITATION	No	A,B,C,D
SYSTEM PERFORMANCE	Yes	

N/A = Not Applicable

III. Validity and Comments

A. The following results, denoted with an "L" qualifier, are estimated and flagged "J" in Table 1A.

- All results below the contract required quantitation limits

Results below the contract required quantitation limits (CRQLs) are considered to be qualitatively acceptable, but quantitatively unreliable, due to the uncertainty in analytical precision near the limit of detection.

B. The detected result for the following target analyte is considered presumptively identified and estimated due to confirmation problems. The result is flagged "NJ" in Table 1A.

- 4,4'-DDT in sample Y0562

A percent difference (%D) in the calculated analyte concentrations between the DB5-MS column and the DB-608 column which exceeds the QC limit of 25.0% was reported for the analyte listed above (see Table 2, Analyte Concentration Summary).

The lower concentration has been reported in Table 1A because coeluting interferences, if present, are likely to increase the concentration of the target analyte. It is the opinion of the

reviewer that, due to the large %Ds between the results quantitated from the DB5-MS column and the DB-608 column, it is questionable whether the presence of the analytes listed above can be considered confirmed in the samples.

The conservative approach would be to assume that the detected analytes are present. The large difference between the two columns may be the result of coeluting interferences on one of the columns. As a result, the user should note that the results are both qualitatively and quantitatively questionable.

The results for the following target analytes were considered presumptively identified and estimated due to confirmation problems. However, the results are not flagged "NJ" in Table 1A due to CRQL qualifications presented in Comment C.

- 4,4'-DDE in sample Y0555
- Dieldrin and gamma-Chlordane in sample Y0562
- 4,4'-DDT in sample Y0564

Percent differences (%D) in the calculated analyte concentrations between the DB5-MS column and the DB-608 column which exceed the QC limit of 25.0% were reported for the analytes listed above (see Table 2, Analyte Concentration Summary).

C. The detected results for the following analytes were changed to nondetected at the CRQL. The results are flagged with the "U" qualifier in Table 1A.

- 4,4'-DDE in sample Y0555
- Dieldrin and gamma-Chlordane in sample Y0562
- 4,4'-DDT in sample Y0564
- Aldrin in sample Y0565

In the opinion of the reviewer, the positive results reported by the laboratory for the analytes listed above are both qualitatively and quantitatively unacceptable. When the reported analyte concentration was less than one-half the CRQL, the result was raised to the CRQL and reported as nondetected in Table 1A. Table 3(Summary of Laboratory Reported Results <½ the CRQL), presents the analyte concentration originally reported by the laboratory and the CRQL for reference.

D. Sample Y0557 was analyzed both undiluted and at a dilution due to high levels of target analytes endrin and 4,4'-DDD.

TABLE 1B

DATA QUALIFIER DEFINITIONS FOR ORGANIC DATA REVIEW

The definitions of the following qualifiers are prepared according to the document, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," February 1994.

U	The analyte was analyzed for but was not detected above the reported sample quantitation limit.
L	Indicates results which fall below the Contract Required Quantitation Limit. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

TABLE 2
Analyte Concentration Summary

Case No.: 29057 SDG No.: Y0552
Site: George AFB
Laboratory: Clayton Environmental Consultants, Inc (CLAYTN)
Reviewer: Dung Ngo, Stella Cuenco, ESAT/LDC, Inc
Date: May 25, 2001

Sample	Analyte	Column	Concentration,ug/Kg	%D	
Y0555	4,4'-DDE	DB5-MS	6.3		
		DB-608	2.3		173.9
Y0562	Dieldrin	DB5-MS	1.7		
		DB-608	1.3		30.8
Y0562	4,4'-DDT	DB5-MS	4.3		
		DB-608	3.3		30.3
Y0562	gamma-Chlordane	DB5-MS	0.64		
		DB-608	1.3		103.1
Y0564	4,4'-DDT	DB5-MS	1.9		
		DB-608	1.5		26.7

TABLE 3
Pesticides: Laboratory Reported Results <½ the CRQL

Case No.: 29057 SDG No.: Y0552
Site: George AFB
Laboratory: Clayton Environmental Consultants, Inc (CLAYTN)
Reviewer: Dung Ngo, Stella Cuenco, ESAT/LDC, Inc
Date: May 25, 2001

Sample	Analyte	Conc., µg/Kg	CRQL, µg/Kg
Y0555	4,4'-DDE	2.3	5.9
Y0562	Dieldrin	1.3	3.6
Y0562	gamma-Chlordane	0.64	1.8
Y0564	4,4'-DDT	1.5	3.5
Y0565	Aldrin	0.82	1.8

In Reference to
Case 29057 SDG# Y0552

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of Call: May 24, 2001

Laboratory Name: CLAYTON Environmental Consultants, Inc

Lab Contact: Karen Coonan

Region: 9

Regional Contact: Steve Remaley, CLP PO

ESAT Reviewer: Stella Cuenco, ESAT/ICF Consulting, Inc. / Laboratory Data Consultants, Inc.

Call Initiated By: ___ Laboratory __X__ Region

In reference to data for the following sample(s):

SDG No.: Y0552

Summary of Questions/issues Discussed:

The following item was noted during the review of this sample delivery group (SDG). Please respond within 7 days as specified in Section 2.2 of Exhibit B of the OLM04.2 Statement of Work (SOW). Send response and resubmissions to ICF Consulting, Inc./Laboratory Data Consultants, Inc., Environmental Services Assistance Team, Region 9, 1337 S. 46th Street, Building 201, Richmond, CA 94804, FAX 510 412-2304

1. Standard prep logs for dieldrin were missing in the data package. Region 9 requires the following information for all standards (calibration and QC): expiration date of standard, preparation date, lot number, standard sources, concentration and volume of spiking and LCS solutions. Please provide the above listed data.

Summary of Resolution: To be determined.

Regional Contact Signature Date of Resolution

Distribution, (original)ESAT; (1)Lab copy, (2)Regional Copy, (3) CLASS copy

Review of the Draft Groundwater Pesticide Investigation Report,
George Air Force Base, California,
May 2002.

GENERAL COMMENT

1. The text of this report does not use the terminology developed for the Geologic Site Conceptual Model (CSM). A Hydrogeologic Site Conceptual Model will also be developed for the George Air Force Base site and the information from the pesticide investigation area should be integrated with the results of these models. Future workplans and reports should use both the terminology and the information developed in these conceptual models for characterizing the sources and groundwater pathway for pesticides at George Air Force Base.

SPECIFIC COMMENTS

1. **Section 2., Drilling, Page 2.1 and Section 3. Hydrogeologic Findings, Page 3-1:** These sections indicate that the hydrogeology in the pesticide investigation area is not well understood. Please recognize that a Hydrogeologic Site Conceptual Model for this area of George Air Force Base must be developed, and this effort would logically require the Geologic Site Conceptual Model for the larger base area be extended into the area where pesticide contaminations is present. These models can then be discussed with the regulatory agencies to set data quality objectives and optimize future investigation efforts.

2. **Section 2.2.3.1, Page 2-5, first full paragraph:** A reference is made to a June 2001TechLaw document, Split Sampling Report, March 2001Soil Pesticide Investigation. This was a draft document and the final report is dated December 2001. Please also note that all sample locations collected for analysis by the U.S. EPA were designated by the U.S. EPA manager. The data for these samples should be identified as EPA sample data and not those of TechLaw or the subcontractor.

3. **Section 3.1, Hydrogeologic Findings, Page 3-2:** It is premature to discuss the lacustrine aquitard because it is not clear from the boring logs in the appendices that the Middle Lacustrine Unit is present as discussed in the text and indicated on Figure 3-1. The indication that the groundwater is partially confined in NZ-66 and NZ-91 supports the possible presence of a confining layer but not necessarily the presence of an aquitard. The site geology appears to be more complex than on the western portion of the base, and until the aquitard can be more definitively identified in this pesticide investigation area references to an aquitard should be removed.

4. **Section 3.2, Groundwater Analytical Results, Page 3-3:** The introductory phrase in the last paragraph apparently contains a typographical glitch. Please confirm that the opening should read "In the Pesticide AOC ...", and that other text has not been omitted.

5. **Section 3.3, Soil Analytical Results, Page 3-4:** The last paragraph suggests that a discrepancy may exist between the Air Force's non-detect observation and the U.S. EPA's detection of dieldrin in the same split sample due to the EPA sample being mislabeled. Without other information, this rationalization is gratuitous speculation, and could also just be due to sample heterogeneity.

6. **Tables 3-1 and 3.2:** The tables do not state whether the limiting concentration values are based on reporting limits or detection limits. However, the definition of the F qualifier suggests the limiting values are based on reporting limits. Please also indicate the detection limits so as to indicate the level, although qualitative, at which dieldrin could be detected. Please also explain the J qualified value for Sample NZ-66 in Table 3-2 as the value is apparently cited as valid in the text.

7. **Section 4.1.2, Recommendations (for groundwater), Page 4-2:** The recommendations for new monitoring wells and continued groundwater sampling is reasonable, and the rationale for location of the wells and the sampling program should be discussed with the regulatory agencies. No data other than dieldrin analyses are presented in this report. For future sampling, please also consider the use water quality parameters or even the use natural abundance isotopes to additionally characterize possible different water sources in the area that would aid in investigating the source(s) of dieldrin.

8. **Section 4.2.2, Recommendations (for soil), Page 4-4:** An extended effort to identify sources of dieldrin in soil that have potential routes to groundwater is reasonable, but discussions with the regulatory agencies are also necessary to clearly define the data quality objectives.